

## WHAT IS CLAIMED IS:

1. A vaccine for immunizing fish against ciliated ectoparasitic protozoans comprising an effective amount of a recombinant fusion protein derived from an artificial DNA sequence for immobilization antigen, repeat I, of *Ichthyophthirius multifiliis*.
2. The vaccine according to claim 1 wherein the fusion protein is GST-iAgI.
3. The vaccine according to claim 1 further comprising a substantially inert medium comprising at least one of buffers, adjuvants, immunostimulants or carriers.
4. The vaccine according to claim 1 having the property that, when it is injected into a fish, provides effective protection against white spot disease caused by *Ichthyophthirius multifiliis*.
5. The vaccine according to claim 2, wherein the fusion protein. is produced using E-coli
6. The vaccine according to claim 4, wherein disease is caused by at least one ciliated ectoparasitic protozoan.
7. The vaccine according to claim 6 wherein said ciliated protozoan consists of *Ichthyophthirius multifiliis*.

8. The vaccine according to claim 1 wherein said ciliated protozoans are taxonomically related to *Ichthyophthirius multifiliis*.

9. A method of immunizing fish against ciliated ectoparasitic protozoans comprising treating said fish with an effective amount of a vaccine according to claim 1.

10. The method as claimed in claim 9 wherein said fish are intraperitoneally injected with said vaccine.

11. The method as claimed in claim 9 wherein said fish are fed a medium comprising said vaccine.

12. The method as claimed in claim 9 wherein said fish are dipped in a medium comprising said vaccine.

13. The method as claimed in claim 9 wherein said fish are sprayed with a medium comprising said vaccine.

14. A method of producing a recombinant vaccine against ciliated ectoparasitic protozoans comprising:

a. selecting a region of a amino acid sequence containing a single repeat of *Ichthyophthirius multifiliis* immobilization antigen epitope (i- Ag I);

b. constructing a gene for the selected region from a plurality of synthetic oligonucleotides based on said i-AgI amino acid sequence using universal codons in place of ciliate codons to produce an i-AgI epitope;

c. expressing said i-AgI epitope as a glutathione S transferase (GST) fusion protein in bacteria, *E. coli*; and

d. purifying said GSH-iAgI fusion protein using a glutathione sepharose.

15. The method according to claim 14 wherein said ciliated ectoparasitic protozoans are taxonomically related to *Ichthyophthirius multifiliis*.

16. The method according to claim 14 wherein said ciliated ectoparasitic protozoans comprise *Ichthyophthirius multifiliis*.

17. A method of immunizing fish against ciliated ectoparasitic protozoans comprising treating said fish with an effective amount of a vaccine made according to claim 14.

18. The method as claimed in claim 17 wherein said fish are intraperitoneally injected with said vaccine.

19. The method as claimed in claim 17 wherein said fish are fed a medium comprising said vaccine.

20. The method as claimed in claim 17 wherein said fish are dipped in a medium comprising said vaccine.

21. The method as claimed in claim 7 wherein said fish are sprayed with a medium comprising said vaccine.

22. A synthetic nucleic acid sequence corresponding to SEQ ID No. 3.

23. A synthetic amino acid sequence corresponding to SEQ ID NO. 1